JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
MBA II Semester Examinations, May - 2022
QUANTITATIVE ANALYSIS FOR BUSINESS DECISIONS

Time: 3 Hours   Max.Marks:75

Answer any five questions
All questions carry equal marks
- - -

1.a) Discuss the origin and development of operations research.
 b) Define model. Discuss the steps of modeling. [8+7]

2.a) Explain the various methods of solving OR problems.
 b) Discuss the quantitative techniques of solving OR problems. [8+7]

3.a) Write the corresponding rules for primal – dual relations.
 b) Solve the following LPP:
 Maximize $Z = 2 x_1 + 3 x_2$
 Subject to restrictions
 $x_1 + x_2 \leq 400$
 $2x_1 + 3x_2 \leq 600$ and non-negativity constraints $x_1 \geq 0, x_2 \geq 0$ [7+8]

4.a) What is an unbalanced transportation problem? How do you overcome the difficulty?
 b) Determine an initial basic feasible solution to the following transportation problem
 using north-west corner rule. [7+8]

|		I	II	III	IV	Supply
	A	13	11	15	20	2000
From	B	17	14	12	13	6000
	C	18	18	15	12	7000
	Demand	3000	3000	4000	5000	

5.a) Certain equipment needs 5 repair jobs which have to be assigned to 5 machines. The
 estimated time (in hours) that a mechanic requires to complete the repair job is given in
 the table. Assuming that each mechanic can be assigned only one job, determine the
 minimum time assignment.

	J1	J2	J3	J4	J5
M1	7	5	9	8	11
M2	9	12	7	11	10
M3	8	5	4	6	9
M4	7	3	6	9	5
M5	4	6	7	5	11

 b) Distinguish between a balanced and an unbalanced assignment problem. [8+7]

6.a) Write the mathematical model of travelling salesmen problem.
 b) Solve the following travelling salesman problem. [7+8]

	A	B	C	D	E	F
A	∞	11	15	16	9	9
B	11	∞	10	15	14	10
C	15	10	∞	8	13	9
D	16	15	8	∞	11	10
E	9	14	13	11	∞	6
F	9	10	9	10	6	∞

7.a) Define decision tree. Explain the steps in construction of decision tree.
  b) Determine the early start and late start in respect of all node points and identify critical
     path for the following network. [7+8]
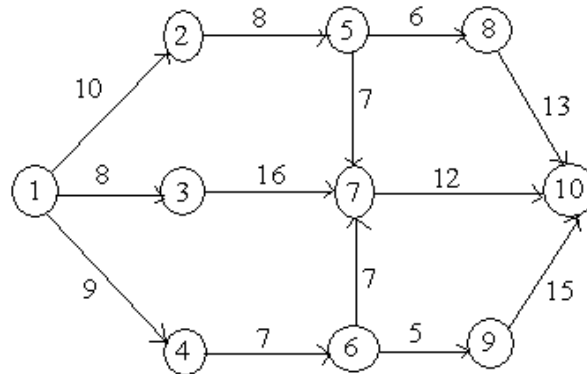
8.a) Discuss M/M/1 queuing model with infinite capacity.
  b) Define game. State and explain the rules for game theory. [7+8]

--ooOoo--